Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (original) A biologically active peptide consisting essentially of the formula selected from:

(a) X_{01}ValX$_{02}$GluIleGlnLeuMetHisX$_{03}$X$_{04}$X$_{05}$X$_{06}$X$_{07}$ (SEQ. ID. NO. 1);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12, or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c);

wherein:

X_{01} is an α-helix-stabilizing residue, Gly, Ser or Ala;

X_{02} is an α-helix-stabilizing residue, Ala or Ser;

X_{03} is Ala, Gln or Asn;

X_{04} is Arg, Har or Leu;

X_{05} is an α-helix stabilizing residue, Ala or Gly;

X_{06} is an α-helix stabilizing residue or Lys;

X_{07} is an α-helix stabilizing residue, Trp or His;

wherein at least one of X_{01}, X_{02}, X_{05}, X_{06} or X_{07} is an α-helix stabilizing residue, and wherein at least one of said α-helix stabilizing residues is Aib, Ac_3c, Ac_4c, Ac_5c, Ac_6c, or Deg.

2. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) AlaValDegGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 37);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

3. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) AlaValAc$_3$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 38);

(b) peptides containing amino acids 1-9,1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

4. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) AlaValAc$_5$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 39);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

5. (original) The peptide of claim1, wherein said peptide is selected from:

(a) DegValAlaGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 24);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

6. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) DegValDegGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 27);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

7. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) DegValAc$_3$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 40);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

8. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) DegValAc$_5$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 41);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

9. (original) The peptide of claim1, wherein said peptide is selected from:

(a) DegValAibGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 42);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

10. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_3cValAlaGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 25);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

11. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_3cValDegGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ.ID. NO. 43);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

12. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_3cValAc_3cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 28);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts (a) or (b) ; or

(d) N- or C- derivatives of (a), (b) or (c).

13. (currently amended) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_3cValAc_5cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO.44);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

14. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_3cValAibGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 45);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

15. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_5cValAlaGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ.ID. NO. 4);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

16. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_5cValDegGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 46);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

17. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_5cValAc_3cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 47);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

18. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_5cValAc_5cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 29);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

19. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_5cValAibGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 15);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12, or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

20. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) AibValDegGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 48);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

21. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) AibValAc$_3$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ.ID. NO. 49);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

22. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) AibValAc$_5$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 50);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

23. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac$_5$cValSerGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 51);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

24. (original) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac$_5$cValSerGlulleGlnLeuMetHisAsnLeuGlyLysHis (SEQ. ID. NO. 52);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12, or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

25. (currently amended) The peptide of claim 1, wherein said peptide is selected from:

(a) Ac_5cValAlaGluIleGlnLeuMetHis (~~part of~~amino acids 1-9 of SEQ. ID. NO. 4);

(b) pharmaceutically acceptable salts thereof; or

(c) N- or C- derivatives of (a) or (b).

26. (original) A biologically active peptide consisting essentially of the formula selected from:

(a) X_{01}ValX_{02}GluIleX_{03}LeuMetHis$X_{04}X_{05}X_{06}$LysX_{07} (SEQ.ID.NO. 5);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12, or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N-or C-derivatives of (a), (b) or (c);

wherein:

X_{01} is α-helix-stabilizing residue, Gly, Ser or Ala;

X_{02} is α-helix-stabilizing residue, Ala or Ser;

X_{03} is Ala, Gln or Asn;

X_{04} is Ala, Gln, Asn, Har or Arg;

X_{05} is an α-helix stabilizing residue, Ala or Gly;

X_{06} is an α-helix stabilizing residue or Lys;

X_{07} is α-helix stabilizing residue, Trp, or His;

wherein at least one of X_{01}, X_{02}, X_{05}, X_{06} or X_{07} is an α-helix stabilizing residue, and wherein at least one of said α-helix stabilizing residues is Aib,Ac_3c,Ac_4c,Ac_5c, Ac_6c, or Deg.

27. (original) The peptide of claim 26, wherein said peptide is selected from:

(a) Ac_4cValAibGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 7);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives (a), (b) or (c).

28. (original) The peptide of claim 26, wherein said peptide is selected from:

(a) Ac_6cValAibGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 8);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

29. (original) The peptide of claim 26, wherein said peptide is selected from:

(a) Ac_5cValAc$_4$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO.9);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives (a), (b) or (c).

30. (original) The peptide of claim 26, wherein said peptide is selected from:

(a) Ac_5cValAc$_6$cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 10);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

31. (original) The peptide of claim 26, wherein said peptide is selected from:

(a) Ac_4cValAc_4cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 11);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

32. (original) The peptide of claim 26, wherein said peptide is selected from:

(a) Ac_6cValAc_6cGluIleGlnLeuMetHisGlnHarAlaLysTrp (SEQ. ID. NO. 12);

(b) peptides containing amino acids 1-9, 1-10, 1-11, 1-12 or 1-13;

(c) pharmaceutically acceptable salts of (a) or (b); or

(d) N- or C- derivatives of (a), (b) or (c).

33. (currently amended) The peptide of claim 1~~ or 26~~, wherein said peptide is labeled with a label selected from the group consisting of a fluorescent label, a chemiluminescent label, a bioluminescent label and a radioactive label.

34. (currently amended) The peptide of claim 1~~ or 26~~, wherein said peptide is labeled with ^{125}I.

35. (currently amended) The peptide of claim 1~~ or 26~~, wherein said peptide is labeled with ^{99m}Tc.

36. (currently amended) A pharmaceutical composition comprising the biologically active peptide of claim 1 ~~or 26~~, and a pharmaceutically acceptable carrier.

37. (currently amended) A method for treating mammalian conditions characterized by decreases in bone mass, said method comprising administering to a subject in need thereof an effective bone-mass increasing amount of [[a]] the biologically active peptide of claim 1 ~~or 26~~.

38. (currently amended) A method for treating mammalian conditions characterized by decreases in bone mass, said method comprising administering to a subject in need thereof an effective bone mass-increasing amount of a composition comprising [[a]] the biologically active peptide of claim 1 ~~or 26~~ and a pharmaceutically acceptable carrier.

39. (currently amended) A method for determining rates of bone reformation, bone resorption and/or bone remodeling comprising administering to a patient an effective amount of [[a]] the peptide of claim 1 ~~or 26~~ and determining the uptake of said peptide into the bone of said patient.

40. (original) The method of claim 37, wherein said condition to be treated is hyperparathyroidism.

41. (original) The method of claim 37, wherein said condition to be treated is hypercalcemia.

42. (original) The method of claim 37, wherein said effective amount of said peptide for increasing bone mass is from about 0.01 μg/kg/day to about 1.0 μg/kg/day.

43. (original) The method of claim 37, wherein the method of administration is parenteral.

44. (original) The method of claim 37, wherein the method of administration is subcutaneous.

45. (original) The method of claim 37, wherein the method of administration is nasal insufflation.

46. (original) The method of claim 37, wherein the method of administration is oral.

47. (currently amended) The method of making the peptide of claim 1 ~~or 26~~, wherein said peptide is synthesized by solid phase synthesis.

48. (currently amended) The method of making the peptide of claim 1 ~~or 26~~, wherein said peptide is synthesized by liquid phase synthesis.

49. (currently amended) The method of making the peptide of claim 1 ~~or 26~~, wherein said peptide is protected by FMOC.